

Purge and Retire Low Pressure Gasholders



Partner Reported Opportunities (PROs)
for Reducing Methane Emissions

PRO Fact Sheet No. 501

Applicable sector(s):

☐ Production ☐ Processing ☒ Transmission and Distribution

Partners reporting this PRO: Keyspan Energy

Other related PROs: Eliminate Unnecessary Equipment and/or Systems, Consolidate Crude Oil Production and Water Storage Tanks

Compressors/Engines ☐
Dehydrators ☐
Pipelines ☐
Pneumatics/Controls ☐
Tanks ☒
Valves ☐
Wells ☐
Other ☐

Technology/Practice Overview

Description

Natural gas is sometimes stored in large, above ground, inflatable storage "tanks" or gasholders. When these are taken out of service, the telescoping gasholder does not collapse completely, retaining a significant amount of low-pressure gas that must be purged, commonly to the atmosphere.

One partner reported venting retired gasholders through a thermal oxidizer to safely combust the methane containing gas to carbon dioxide. Portable thermal oxidizers are generally available, and efficiently oxidize hydrocarbon-air mixtures in a flameless, heated, packed bed reactor.

Operating Requirements

Requires nitrogen and/or water to displace remaining gas in a collapsed gasholder. Also requires electricity, supplemental fuel gas, and possibly a temporary operating permit for the thermal oxidizer.

Applicability

This practice is applicable to the decommissioning of all gasholders.

Methane Savings: 500 Mcf per year

Costs

Capital Costs (including installation)

☒ <\$1,000 ☐ \$1,000 – \$10,000 ☐ >\$10,000

Operating and Maintenance Costs (annual)

☐ <\$100 ☐ \$100-\$1,000 ☒ >\$1,000

Payback (Years)

None

Benefits

Reducing methane emissions was an associated benefit of the project.

Methane Emissions Reductions

The methane content of a collapsed gasholder is based on the inside dimensions of the tank with all lifts landed. The gas contents must be displaced with either nitrogen or water to avoid creating an explosive mixture within the gasholder, or imploding the thin-walled roof. One partner reported saving 500 Mcf of methane for each of three gasholders removed from service.

Economic Analysis

Basis for Costs and Savings

Methane emissions reductions of 500 Mcf per year apply to one 124-foot diameter, four-lift, 50 feet collapsed height oil-seal gasholder.

Discussion

Because the methane containing gas is combusted, rather than recovered as a product, there is no revenue generated. While there are no capital costs, the costs of nitrogen and/or water, plus contracting a thermal oxidation service, including utilities and labor, would have to be justified by safety and environmental considerations. Economies of scale may be achieved in retiring multiple gasholders at one time: e.g. permitting, reuse of displacement water, site preparation, and mobilization.